

SOME QUEENSLAND LEAF-HOPPERS (JASSOIDEA, HOMOPTERA) THAT ATTACK LUCERNE.

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A number of leaf-hoppers are important pests of lucerne, cotton, and tomato crops grown in Queensland. The nature of the injury they cause to tomato plants has been discussed by Atherton (1933) and to cotton by Sloan (1938).

During a survey recently made by the Queensland Department of Agriculture and Stock of the insect pests that occur on lucerne in the State, several plant-bugs were obtained. These comprised leaf-hoppers (Jassoidea) and plant-hoppers (Fulgoroidea: Delphacidae and Eurybrachidae). The present paper is an account of the leaf-hoppers only. It deals with eight species, some of which may be serious pests, and others merely of chance occurrence on lucerne. Three species have been described previously, whilst five are new.

An attempt is made by means of a key and numerous figures to render the identification of these insects simple to any entomologist who may have occasion to name them.

It is improbable that any are solely pests of lucerne, but rather that they are all general feeders associated more with a particular environment than an especial food-plant. Hence it is to be expected that some at least will occur as pests of several field crops.

The key that follows is entirely artificial, and is concerned only with the species dealt with.

KEY.

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|--|---|-------------------------------|
| 1. Leaf-hoppers 4 mm. or less in length | 2 | |
| Leaf-hoppers more than 4 mm. in length | | <i>Eurinoscopus punctatus</i> |
| 2. General coloration yellow or green | 3 | |
| General coloration not as above | | 7 |
| 3. Venation of tegmen as in Figure 17 | | <i>Cicadula bimaculata</i> |
| Venation of tegmen not as above | | 4 |
| 4. Venation of tegmen as in Figure 3 | | <i>Erythroneura sativae</i> |
| Venation of tegmen as in Figure 6 | | 5 |
| 5. Crown of head narrow, of even width throughout .. | | <i>Empoasca athertoni</i> |
| Crown of head wider medially than against the eyes | 6 | |
| 6. Leaf-hoppers less than 3 mm. in length | | <i>Empoasca alfalfae</i> |
| Leaf-hoppers 3 mm. or more in length | | <i>Empoasca terra-reginae</i> |
| 7. Ventral surface of the head as in Figure 18 | | <i>Nehela torrida</i> |
| Ventral surface of the head as in Figure 19 | | <i>Thamnotettix argentata</i> |

Eurinoscopus punctatus sp. nov.

(Text Figure 1, figs. 11, 12, 13.)

(NOTE.—The colour-description has been made from a dried, possibly faded, specimen.)

Length 4.8 mm. *Head*, ventral surface pale brown but for the maxillary plates and ante-clypeus, which are pale green; ocelli large, reddish-brown; eyes dark reddish-brown. Hind margin of fronto-clypeus perceptible. Crown pale yellowish-brown, slightly wider in the middle than against the eyes. *Pronotum*, anterior third smooth, pale green; posterior two-thirds pale yellowish-brown flecked with green and with

transverse striations. *Scutellum*, pale yellowish-brown. *Tegmen*, pale hyaline-brown, veins and entire margin of the tegmen, green; principal veins and cross veins bordered on each side with small brown spots. *Thorax* and *abdomen*, ventral surface pale yellowish-green.

Type ♂ from Darling Downs, Queensland (collection D. O. Atherton, on lucerne, 14-9-39), in the Queensland Museum collection (Ho. 5223).

Nehela torrida Evans.

(Pap. Roy. Soc. Tas. 1936-37, p. 70.)

(Fig. 18.)

This species can be readily identified from the figure of the ventral surface of the head, as no other leaf-hopper described from Australia has ventral ocelli that are so closely set together. The type specimen and others collected at the same time came to light in a house in Adelaide which faced a paddock of lucerne. This species, which was originally made the genotype of the genus *Austroagallia* Evans, is now transferred to *Nehela* F. W. B., 1878, Mr. P. W. Oman having drawn my attention to the identity of the two genera. The type of *Nehela*, of which *Igernia* Kirk., 1903, is also a synonym, is *Bythoscopus (Oncopsis) bimaculaticollis* Stål, 1855.

Thamnotettix argentata Evans.

(Pap. Roy. Soc. Tas. 1938-39, p. 15.)

(Fig. 19.)

This small leaf-hopper has a pale yellow head with dark brown markings. The tegmina are hyaline, with an irregular network of dark-brown markings. It is common on a wide variety of weeds in all States of Eastern Australia, and has been recorded from tobacco in New South Wales.

Cicadula bimaculata sp. nov.

(Text Figure 1, figs. 14-17.)

Length 3 mm. *Head*, yellow with two large black spots on the crown that extend on to the ventral surface of the vertex; eyes dark brown. Fronto-clypeus and anterior margin of the head rounded; frontal sutures barely perceptible. Crown of head and *pronotum* pale brown; *scutellum* yellow. *Tegmen* pale yellowish-hyaline, veins pale brown. *Abdomen*, dorsal surface visible through the folded tegmina and wings, very dark brown; ventral surface pale yellow. Apex of ovipositor of female, black.

Type ♂ from Lockyer, Queensland (collection D. O. Atherton, on lucerne, 24-8-39), in the Queensland Museum collection (Ho. 5222).

Empoasca terra-reginae Paoli.

(Mem. Soc. Ent. Ital. 15, 1936.)

(Figs. 7-8.)

Length 3.2 mm. General coloration green.

Head, ventral surface pale greenish-yellow; maxillary plates, lora, and ante-clypeus paler than the fronto-clypeus. Fronto-clypeus with a median white longitudinal stripe, constricted in the middle, and a pair of white markings directed anteriorly just behind each antenna. Crown green with white lateral markings, and a posterior continuation of the median fronto-clypeal band. *Pronotum* green, with a series of white

markings lying close to the anterior margin. *Scutellum* yellowish-green, with a median white area (usually forked) and lateral white markings. (The colour pattern described above is variable). *Tegmen*, proximal two-thirds pale greenish-hyaline; distal third transparent; veins pale green. *Thorax* and *abdomen*, ventral surface pale yellowish-green; legs emerald green.

NOTE.—This species is re-described, as the journal containing the original description is not readily available in Australia. It would appear that *E. terra-reginae* is of considerable economic importance, since in addition to being recorded from lucerne (Darling Downs) and tomatoes (Dimbulah), specimens have been received from Moree, New South Wales, accompanied by a report that they were abundant on vegetables and weeds.

Empoasca athertoni sp. nov.

(Text Figure 1, figs. 9, 10.)

Length 2.8 mm. General coloration dark green.

Head, ventral surface mottled with an irregular pattern of yellowish- and olive-green. Crown narrow, of even width throughout. Crown of head, *pronotum* and *scutellum*, dull green. *Tegmen* long and narrow, pale hyaline yellowish-green.

Type ♂ from Lockyer, Queensland (collection D. O. Atherton, on lucerne, 25-7-39), in the Queensland Museum collection (Ho. 5224).

Empoasca alfalfae sp. nov.

(Text Figure 1, figs. 4, 5, 6.)

Length 2.5 mm. General coloration pale yellowish-green. Eyes dark brown. *Tegmen* hyaline yellowish-green, apically pale hyaline-brown.

Type ♂ from Lockyer, Queensland (collection D. O. Atherton, on lucerne, 24-8-39), in the Queensland Museum collection (Ho. 5225).

Erythroneura sativae sp. nov.

(Text Figure 1, figs. 1, 2, 3.)

Length 2 mm. General coloration yellow, eyes black.

Head with the crown produced medially; ocelli obsolete.

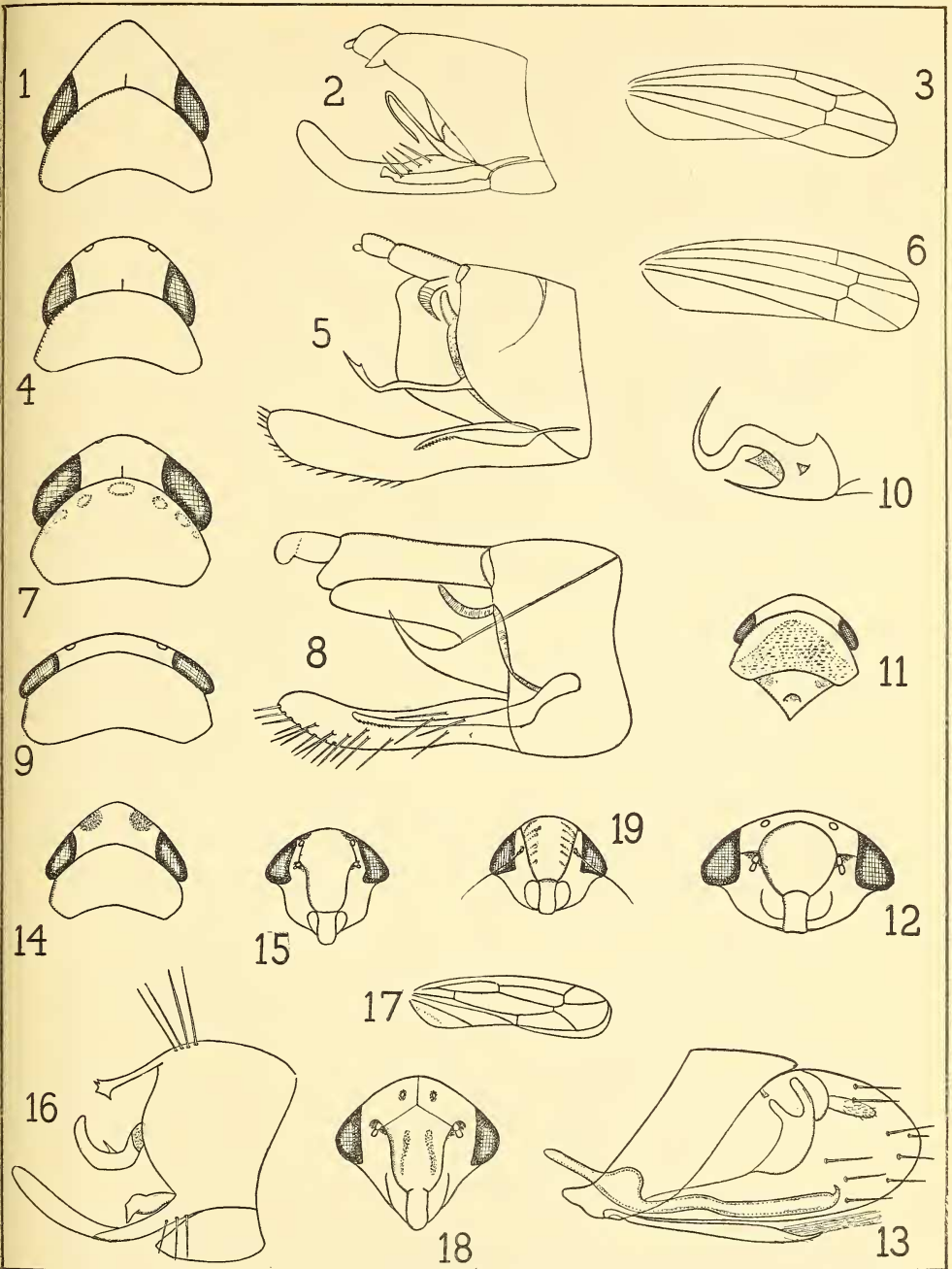
Type ♂ from Yeerongpilly, Queensland (collection W. A. Smith, on lucerne, 6-11-39), in the Queensland Museum collection (Ho. 5221).

REFERENCES.

- ATHERTON, D. O. (1933): "The Tomato Green Fly Association," Qd. Agri. J., XLI., 291.
SLOAN, W. J. S. (1938): "Cotton Jassids or Leaf-hoppers," Qd. Agri. J., L., 450.

EXPLANATION OF TEXT FIGURE I.

- Fig. 1. *Erythroneura sativae*, Head and pronotum, dorsal aspect.
Fig. 2. *Erythroneura sativae*, Male genitalia.
Fig. 3. *Erythroneura sativae*, Tegmen.
Fig. 4. *Empoasca alfalfae*, Head and pronotum, dorsal aspect.
Fig. 5. *Empoasca alfalfae*, Male genitalia.
Fig. 6. *Empoasca alfalfae*, Tegmen.
Fig. 7. *Empoasca terra-reginae*, Head and pronotum, dorsal aspect.
Fig. 8. *Empoasca terra-reginae*, Male genitalia.
Fig. 9. *Empoasca athertoni*, Head and pronotum, dorsal aspect.
Fig. 10. *Empoasca athertoni*, Aedeagus.



TEXT FIGURE 1.

Fig. 11. *Eurinoscopus punctatus*, Head and thorax, dorsal aspect.

Fig. 12. *Eurinoscopus punctatus*, Head, ventral aspect.

Fig. 13. *Eurinoscopus punctatus*, Male genitalia.

Fig. 14. *Cicadula bimaculata*, Head and pronotum, dorsal aspect.

Fig. 15. *Cicadula bimaculata*, Head, ventral aspect.

Fig. 16. *Cicadula bimaculata*, Male genitalia.

Fig. 17. *Cicadula bimaculata*, Tegmen.

Fig. 18. *Nehela torrida*, Head, ventral aspect.

Fig. 19. *Thamnolettix argentata*, Head, ventral aspect.